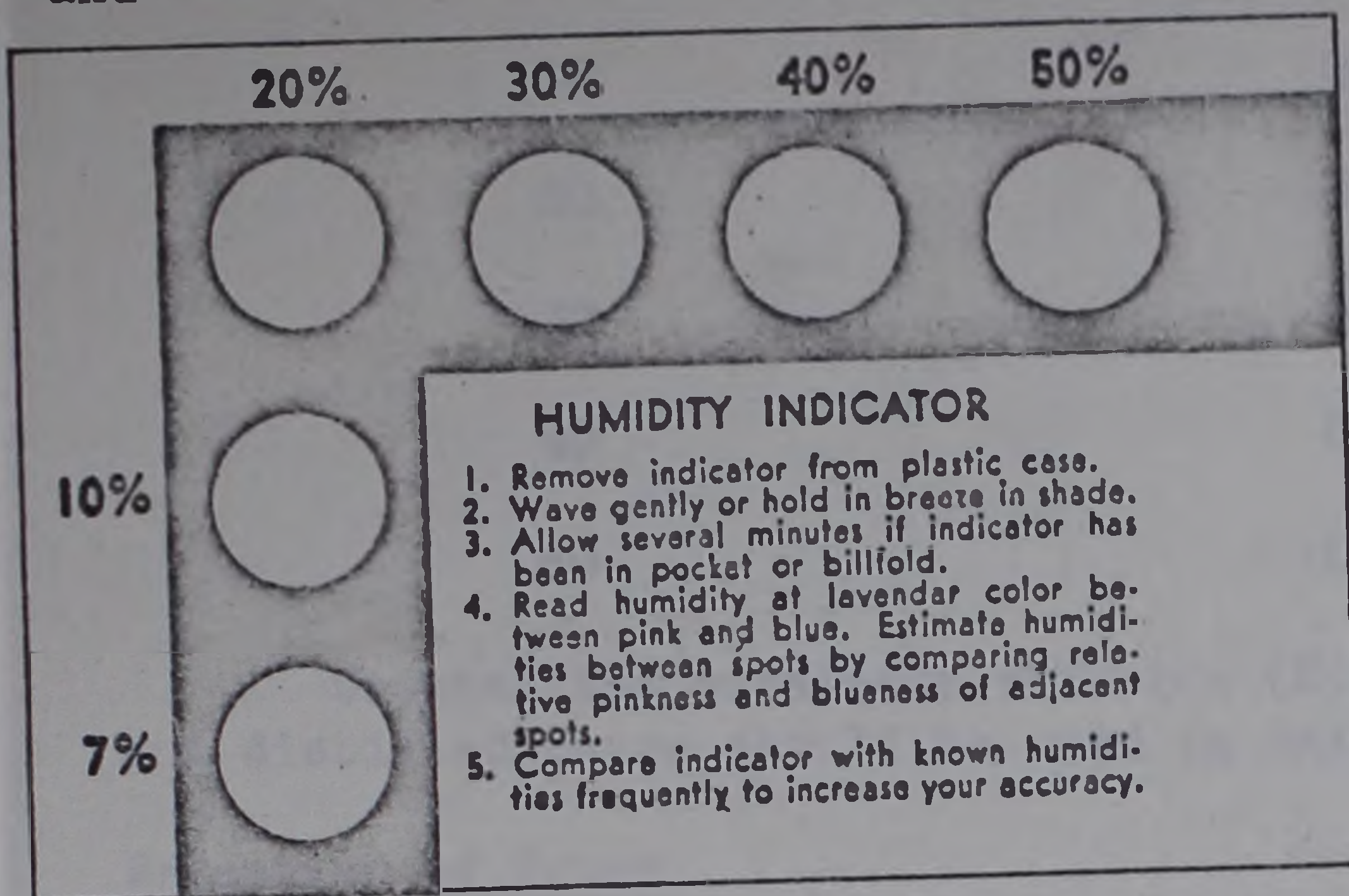


A POCKET TYPE HUMIDITY INDICATOR
FOR USE IN FIRE PREVENTION AND CONTROLBy
Clive M. Countryman

Humidity is often an indicator of the probability of fires starting and is an important element affecting the behavior of fires that do start. Knowledge of the relative humidity is thus important in both fire prevention and control activities. It is now possible to get a reasonably accurate

estimate of relative humidity under field conditions with a pocket-sized humidity indicator designed by the Station's fire research staff.



Easy to handle and inexpensive, the indicator is in the form of a $2\frac{1}{2}$ by $3\frac{1}{2}$ -inch card. The card is carried in a transparent plastic case which protects it from excess moisture, dirt and grease.

Six spots on the card are treated with cobalt chloride solutions, differing in concentration for each spot. The spots change from pink to blue as humidity decreases and the reverse when it increases. The color changes are not abrupt, but shade gradually from intense blue or pink through lighter shades and mixtures of these two colors.

When the relative humidity corresponds with any one of the six values shown, the color of the corresponding spot is lavender. If the humidity is higher than that shown for a spot, the color will be on the pink side of lavender; if lower, it will be on the blue side.

Relative humidity can usually be estimated from the card within 5 to 10 percent of actual humidity without other aids. Precision can be increased by practice in reading the card and associating color variations with known humidities.

Information on sources of supply may be had from California Forest and Range Experiment Station. For those interested in procuring from their own local sources, specifications for preparation of the solutions may be had on request to the Station.

The California Forest and Range Experiment Station is maintained at Berkeley in cooperation with the University of California.

SPECIFICATIONS FOR MAKING COBALT CHLORIDE HUMIDITY INDICATORS

The following specifications are intended to provide the essential information for those interested in making the cobalt chloride humidity indicators described in a paper released by the California Forest and Range Experiment Station^{1/}.

Preparation of the Solutions

Solution concentration for the six humidity spots used on the card are given below:

<u>Relative humidity</u>	<u>Grams of cobalt chloride per cc of water</u>
7	0.0023795
10	0.0190360
20	0.0713850
30	0.1261135
40	0.1784625
50	0.2308115

Crystalline cobaltous chloride ($\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$) of laboratory grade and distilled water should be used in making the solutions.

Selection of Paper

The solution concentrations were selected to give a lavender color reaction at the indicated humidity when used on 80-pound blotting paper of good quality. Other absorbent materials may be used; however, the color reactions will vary somewhat with the weight and absorbency of the impregnated material.

Application of the Solutions

The blotting paper should be at a very low moisture content, preferably oven dry, when the solution is applied. A small tube of glass, metal, or plastic, is most satisfactory for application of the solutions. Allow the tube to touch the paper so that the solution flows on, since considerable color variation often results if the solution is applied by drops. For large scale production, constant humidity and drying conditions during the manufacturing process are essential if exact uniformity among the indicators is desired.

^{1/} Countryman, C. M., A pocket type humidity indicator for use in fire prevention and control (Misc. Paper No. 12). Berkeley, California May 1953.

FOREST SERVICE

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SUPPLEMENT TO
CHECKLIST OF THE VERTEBRATE FAUNA OF
SAN DIMAS EXPERIMENTAL FOREST

By John T. Wright and Jerome S. Horton

For the past several years H. L. Cogswell, University of California Department of Zoology, has been making intensive studies of the bird populations in the chaparral formation of the San Dimas Experimental Forest. During this period he has recorded many species not included in the publication "Checklist of the Vertebrate Fauna of San Dimas Experimental Forest," Miscellaneous Paper No. 7, November 1951. These species are listed below with brief notes as to their habitat and occurrence. No specimen of any of these species is included in the Experimental Forest collection.

The California Forest and Range Experiment Station is maintained by the Forest Service, U. S. Department of Agriculture, in cooperation with the University of California, Berkeley, California.

ADDITIONAL MAMMALS FOUND ON THE SAN DIMAS EXPERIMENTAL FOREST

RABBITS

Brush Rabbit (Sylvilagus bachmani)
Fairly common in chaparral.

ADDITIONAL BIRDS FOUND ON THE SAN DIMAS EXPERIMENTAL FOREST

DUCKS, etc.

Pintail (Anas acuta)
Migrant; Big Dalton Reservoir.

VULTURES, HAWKS, and EAGLES

Swainson Hawk (Buteo swainsoni)
Migrant.

OWLS

Pygmy Owl (Glaucidium gnoma)
Rare resident.

Long-eared Owl (Asio otus wilsonianus)
Occasional resident

SWIFTS and HUMMINGBIRDS

Vaux Swift (Chaetura pelagica)
Occasional migrant.

Black Swift (Nephoecetes niger)
Rare summer visitor; perhaps nesting in East Fork
San Gabriel Canyon.

Costa Hummingbird (Calypte costae)
Abundant summer resident; open chamise-chaparral where
black sage (Salvia mellifera) is abundant.

Rufous Hummingbird (Selasphorus rufus)
Common migrant.

Allen Hummingbird (Selasphorus sasin)
Occasional migrant.

Calliope Hummingbird (Stellula calliope)
Common migrant.

PERCHING BIRDS - FLYCATCHERS

Traill Flycatcher (Epidonax traillii)
Occasional migrant.

Wright Flycatcher (Epidonax wrightii)
Migrant.

Gray Flycatcher (Epidonax Griseus)
Occasional migrant.

Olive-sided Flycatcher (Nuttallornis borealis)
Common in summer; bigcone spruce and ponderosa pine forests.

SWALLOWS

Tree Swallow (Iridoprocne bicolor)
Fairly common migrant.

Barn Swallow (Hirundo rustica erythrogaster)
Occasional migrant.

WRENS

House Wren (Troglodytes aedon)
Common summer resident in woodlands.

THRUSHES, etc.

Swainson Thrush (Hylocichla ustulata)
Fairly common migrant, may nest in stream woodland.

WAXWINGS and SILKY FLYCATCHERS

Cedar Waxwing (Bombycilla cedrorum)
Occasional, sometimes common, winter visitor.

VIREOS

Solitary Vireo (Vireo solitarius)
Common summer visitor; bigcone spruce forest and oak-woodland.

WOOD WARBLERS

Calaveras Nashville Warbler (Vermivora ruficapilla)
Fairly common migrant.

Townsend Warbler (Dendroica townsendii)
Fairly common migrant.

Hermit Warbler (Dendroica occidentalis)
Fairly common migrant.

Tolmie Warbler (Oporornis tolmiei)
Occasional migrant.

FINCHES and SPARROWS

American Goldfinch (Spinus tristus)

Occasional summer visitor below 3,000 feet.

Green-tailed Towhee (Chlorura chlorura)

Occasional migrant.

Lark Sparrow (Chondestes grammacus)

Occasional summer visitor; open areas at low altitudes.

Rufous-crowned Sparrow (Aimophila ruficeps)

Fairly common in sparsely vegetated areas below 3,000 feet.

Chipping Sparrow (Spizella passerina)

Fairly common migrant.

Black-chinned Sparrow (Spizella atrogularis)

Common in summer; chamise-chaparral